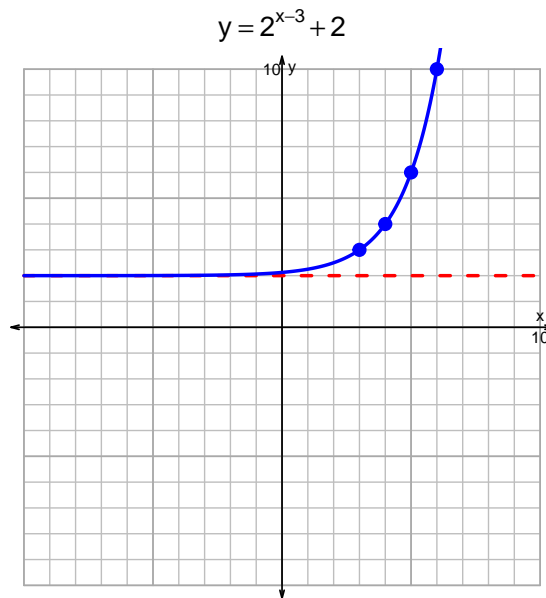
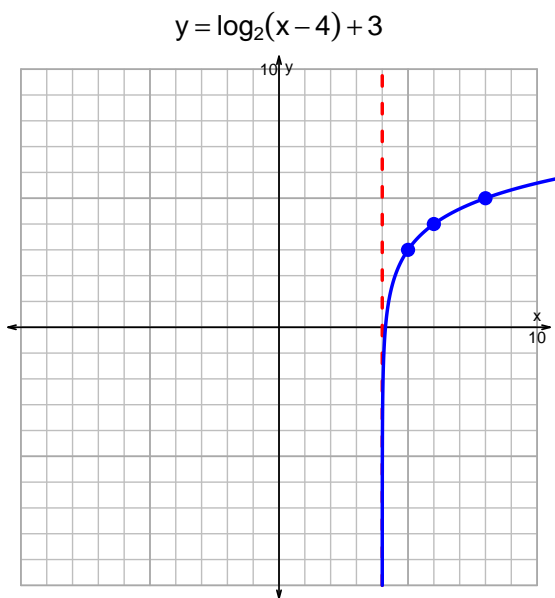


Name: _____

Date: _____

s18: EXP LOG (SLTN v318)

1. (10 pts) Graph $y = \log_2(x - 4) + 3$ and $y = 2^{x-3} + 2$ on the grids below. Also, draw any asymptotes with dashed lines.



Somewhat useful hint: $2^3 = 8$, and thus $\log_2(8) = 3$.

2. (10 pts) Write (but do not evaluate) the solution to the equation below by writing a logarithmic expression. Please do not do any arithmetic; just move numbers around.

$$-11 = \left(\frac{-5}{3}\right) \cdot 10^{7t/4}$$

Divide both sides by $\frac{-5}{3}$.

$$\frac{11 \cdot 3}{5} = 10^{7t/4}$$

Take log, base 10, of both sides.

$$\log_{10}\left(\frac{11 \cdot 3}{5}\right) = \frac{7t}{4}$$

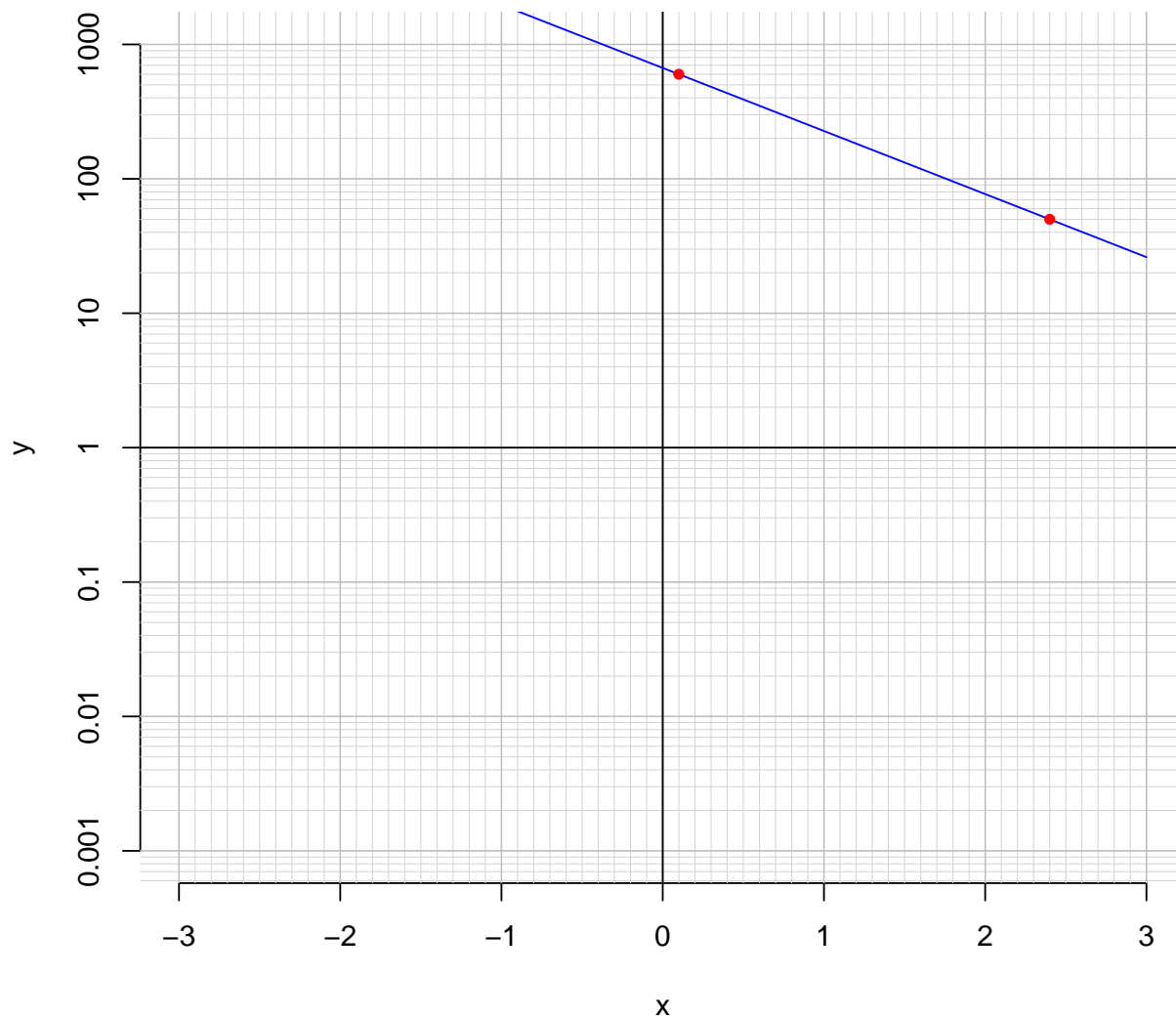
Divide both sides by $\frac{7}{4}$.

$$\frac{4}{7} \cdot \log_{10}\left(\frac{11 \cdot 3}{5}\right) = t$$

Switch sides.

$$t = \frac{4}{7} \cdot \log_{10}\left(\frac{11 \cdot 3}{5}\right)$$

3. (10 pts) An exponential function $f(x) = 668 \cdot e^{-1.08x}$ is graphed below on a semi-log plot.



- a. Using the plot above, evaluate $f(0.1)$.

$$f(0.1) = 600$$

- b. The inverse function is logarithmic.

$$f^{-1}(x) = \frac{-1}{1.08} \cdot \ln\left(\frac{x}{668}\right)$$

Using the plot above, evaluate $f^{-1}(50)$.

$$f^{-1}(50) = 2.4$$